INTELLIGENCE AND DEFENSIVE CULMINATING POINT-- PIERCING THE FOG

A Monograph
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Abstract

Intelligence and the Defensive Culminating Point -- Piercing the Fog

This monograph examines Carl von Clausewitz's theoretical concept of the defensive culminating point and the ability of Army doctrine and its's analysis system -- Intelligence Preparation of the Battlefield -- to determine an enemy's courses of action under the conditions of culmination.

The paper first defines culmination accurately, particularly defensive culmination and includes a discussion of the factors that lead to this state. Although Clausewitz's *On War* will form the basis for this definition, sources including U.S. Army doctrine and current writings on the topic are also studied. From this definition the monograph next employs the Battle of the Bulge as a case study for operational defensive culmination. This battle tests Clausewitz's theoretical concept against an actual operation and demonstrates indicators and intelligence methods that assist in predicting defensive culmination. The paper then analyzes the current intelligence estimate process for its ability to detect and anticipate defensive culmination.

The monograph concludes with an assessment of the utility of current doctrine to identify defensive culmination. The study also develops indicators of culmination drawn from both the theoretical definition of culmination and the practical example found in the Battle of the Bulge.

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Abstract

Intelligence and the Defensive Culminating Point -- Piercing the Fog

This monograph examines Carl von Clausewitz's theoretical concept of the defensive culminating point and the ability of the Army's analysis system -- Intelligence Preparation of the Battlefield -- to determine an enemy's courses of action under the conditions of culmination. The purpose of this analysis is to determine how doctrine recognizes and deals with the task of detecting defensive culmination and anticipating the conditions that may cause an opponent to initiate an otherwise unexpected attack.

The paper first attempts to define accurately the concept of culmination, particularly as it applies to the defender. This definition includes a general outline of the elements that a force approaching defensive culmination may manifest. Although Clausewitz's *On War* will form the basis for this definition, other sources including U.S. Army doctrine and current writings on the topic are also studied. After establishing a workable definition for defensive culmination, the monograph turns to the Battle of the Bulge as a case study for operational defensive culmination. This battle is used to test Clausewitz's theoretical concept against an actual operation, as well as to discover indicators and intelligence methods that may assist in the prediction of defensive culmination. The paper next analyzes the current intelligence estimate process (Intelligence Preparation of the Battlefield) for its ability to determine the results of combat operations necessary to predict defensive culmination.

The monograph concludes with an assessment of the ability of current doctrine to identify defensive culmination. The study also develops indicators of culmination drawn from both the theoretical definition of culmination and the practical example found in the Battle of the Bulge. As a portion of this analysis, the paper discusses potential estimation techniques and provides a framework for evaluating enemy capabilities and intentions prior to the point of defensive culmination.

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"Since all information and assumptions are open to doubt, and with chance at work everywhere, the commander continually finds that things are not as he expected....We now know more, but this makes us more, not less uncertain." [1]

Clausewitz

I. Introduction.

The purpose of this study is to analyze Carl von Clausewitz's concept of the defensive culminating point and its relationship to determining an enemy's course of action. In providing a model for understanding an enemy's possible intentions, the defensive culminating point holds more than theoretical interest. It points to a method of analysis to determine more readily defensive culmination in an opponent and therefore anticipate the conditions that may cause him to initiate an otherwise unexpected attack.[2]

Essential to Clausewitz's concept is the idea that culmination is an interactive process, dependent on the capabilities of both the attacker and the defender. It is in discerning the culmination of the defender, even through the veil of deception, that the intelligence process can contribute to the success of offensive operations. This paper will first attempt to define the concept of culmination, particularly as it applies to the defender. The definition will include a general outline of the elements that a force may manifest as it approaches defensive culmination. Although Clausewitz's *On War* will form the basis for this definition, other sources on the topic will also be studied to determine how his concept is interpreted today.

After establishing a workable definition for defensive culmination, the paper will turn to the events leading to the Battle of the Bulge as a case study for operational defensive culmination. This battle demonstrates the concept of defensive culmination at the

operational level and provides a practical means to study Clausewitz's theory. It may also allow us to discover indicators and intelligence methods that may assist in the prediction of defensive culmination.

The research will next turn to the U.S. Army's current doctrinal interpretation of the defensive culminating point. The implications of the doctrinal definition will be explored for its impact on the intelligence estimate process (Intelligence Preparation of the Battlefield). Of particular interest is the ability of the process to determine the *interactive* results of combat operations necessary to predict defensive culmination and determine the enemy's potential courses of action. At the conclusion of the study, a useful framework for estimating enemy capabilities and intentions prior to the point of defensive culmination will be explored.

"The attacker is purchasing advantages that may become valuable at the peace table, but he must pay for them on the spot with his fighting forces"[3]

Clausewitz

II. The Concept of Culmination

Clausewitz's theoretical concept for the relationship between the offense and defense is important to understanding the defensive culminating point. Offense and defense form a logical antithesis because in each is an element of the other -- the defense requires an attack phase because it cannot achieve decision through purely defensive means.[4] Although in theory an attack could occur in one continuous motion, it also experiences periods of inactivity. Any part of an army that is not attacking is defending.[5] In each form there exists by definition elements of the other.

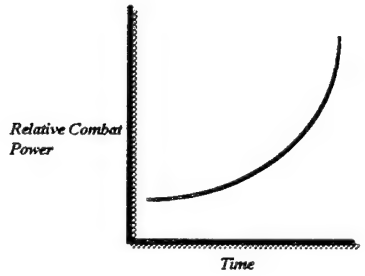
Clausewitz's concept of the defense is essential to understanding this relationship. Among Clausewitz's better known and more controversial statements is the idea that the defense is the stronger form of war. He supports this with the simple proof of experience -- that superior forces normally attack while weaker forces defend. The defense is the stronger form of war because while the attacker expends resources in approaching the defender, the defender gains in resources with the passage of time. The defense has four distinct advantages in Clausewitz's construct, each of which contributes to its theoretical strength: (1) It can best utilize terrain. (2) It possesses an organized theater of operations (lines of communication, bases of supply, etc.). (3) It has the support of the surrounding population (when defending in one's own country). (4) It has the advantage of waiting (gaining strength over time, rather than losing).[6]

Clausewitz also defines three purposes for conducting a defense: (1) To destroy enemy forces; (2) to defend a locality; (3) to defend an object. The purpose of the attack, as the antithesis of the defense, is to destroy the enemy, or capture a locality or object.[7] Each form possesses elements of the other and shares a common purpose -- to destroy the enemy. This concept of antithesis is key to understanding culmination. Just as the offense and defense exist only in the presence of the other, culmination cannot exist in one force without existing in the other.

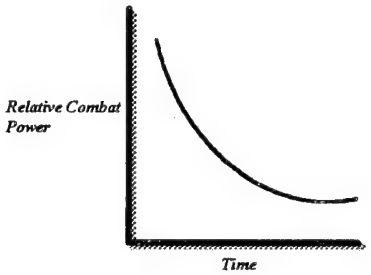
The American Heritage Dictionary defines the verb culminate as "*to reach the highest point or degree; come to full effect; climax.*"[8] Clausewitz provides his own definition in Book 7, chapter 5:

> Success in attack results from the availability of superior strength, including of course both physical and moral....Most of them [strategic attacks] only lead up to the point where their remaining strength is just enough to maintain a defense and wait for peace. Beyond that point the scale turns and the reaction follows with a force that is usually much stronger than that of the original attack. That is what we mean by the culminating point of the attack.[9]

Common to these definitions is the idea of a point of balance. In combat it becomes the point beyond which the loss of relative combat power begins to occur at an increasingly rapid rate.



Defender's Relative Combat Power



Attacker's Relative Combat Power

Clausewitz states that loss of strength in the attacker, the reason for eventual culmination, can come from (1) the need to drop off detachments to invest fortresses or secure captured areas; (2) the increasing resistance that occurs as the attacker approaches his opponent's territory; (3) the attacker moving farther away from his own supplies; (4) the defender being reinforced by an ally; (5) the defender, now more threatened and therefore more desperate, making a greater effort.[10] Unless the enemy began with overwhelming superiority, these features are likely to cause the attack to culminate. As wars now consist of campaigns, rather than single battles, Clausewitz's model can be expanded to encompass a series of culminating points, rather than one single point in time.[11]

The U.S. Army defines offensive culmination in Field Manual 100-5 as:

> ... the point in time and location when the attacker's combat power no longer exceeds that of the defender. Here the attacker greatly risks counterattack and defeat and continues the attack only at great peril. The art of the attack at all levels is to secure the objective before reaching culmination.

The manual goes on to define defensive culmination as:

> A defender reaches culmination when he no longer has the capability to go on the counteroffensive or defend successfully. The art of the defense is to draw the attacker to his culmination, then strike when he has exhausted his resources and is ill-disposed to defend successfully.[12]

Field Manual 34-130, *Intelligence Preparation of the Battlefield*, the Army's manual on the intelligence estimate process, closely mirrors this definition: "The point in time and space when the attacker's combat power no longer exceeds that of the defender or when the defender no longer has the capability to defend successfully."[13]

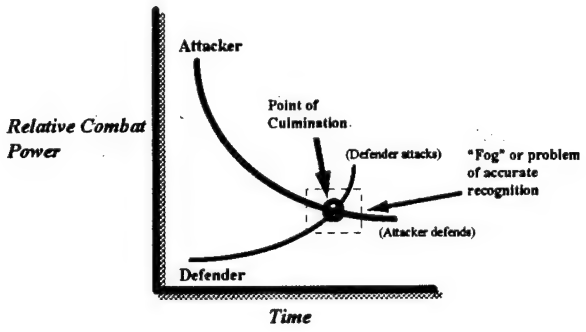
Both Clausewitz and Field Manual 100-5 regard the culminating point as a moment of balance that changes the defender's ability or desire to continue to defend. It is here that Field Manual 100-5 parts company with Clausewitz. Clausewitz's definition suggests that the defender at the point of culmination is not incapable of offensive action, but rather is forced by circumstances to attack. He states: "Once the defender has gained an important advantage, defense as such has done its work. While he is enjoying this advantage, he must strike back or he will court destruction."[14] He later states,

> So long as the defender's strength increases every day while the attacker's diminishes, the absence of a decision is in the former's best interest; but if only because the effects of the general losses to which the defender has continually exposed himself are finally catching up with him, the point of culmination will necessarily be reached when the defender must make up his mind and act, when the advantages of waiting have been completely exhausted. [15]

In these statements, Clausewitz indicates that two conditions must exist for the defender to achieve culmination. First, the attacker must approach culmination -- he must have weakened himself enough to become vulnerable to being attacked. Stated another way, the defender no longer needs or desires the stronger form of war to defeat this enemy. If the enemy has not become relatively weaker, the defender is unlikely to relinquish the advantages of terrain and the protection of his defensive positions to attack a superior foe.

The second condition is that the defender must perceive that the advantages of the defense are diminishing -- that he is beginning to lose combat power at a higher rate than the attacker. This might occur because the attacker refuses to batter himself against the defense, preferring instead to pause and build forces to regain his superiority. This could also occur because the defender perceives that it is now costing as much or more combat

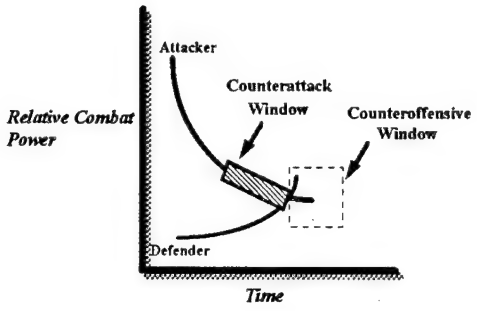
power as it would to take to attack but without the advantages of initiative and decision. The defender may also recognize that the enemy has achieved positional advantage through maneuver, neutralizing the defender's ability to leverage terrain and time to reduce the attacker's superiority. Clausewitz states that the result of defensive culmination is a decision to take action, normally a transition to the offense. The attacker must be aware not only of his own culmination point forcing him to defend, but also of the culmination of the defender leading to an unexpected attack. It is in this point that both Field Manuals 100-5 and 34-130 miss Clausewitz's argument that defensive culmination is an interactive process, dependent on the culmination of both actors.



Culmination

For additional clarity, one must also examine the difference between defensive culmination's offensive result and the counterattack that occurs as part of the defense. Recalling that the defense possesses elements of both the defense and the offense, the counterattack for Clausewitz is an integral part of the defense. Its aim, destroying the attacking force, is defensive and brings about the attacker's culmination. The attack that results from defensive culmination requires that the attacker first culminate. This action

might more properly be termed a counteroffensive. The aim is no longer to destroy the attacker, but to seize the initiative from the attacker and accomplish objectives beyond destruction of the enemy or retention of terrain or an object.



Counterattack as a Part of the Defense

An army does not normally choose to defend unless it lacks the capability to win offensively. It is precisely for this reason that Clausewitz termed defense the stronger form of war -- because the defender ordinarily only adopts it because he lacks the means to defeat his opponent through offensive means. He chooses to wait, gaining strength while the attacker expends his combat power. Defensive culmination does not occur in the absence of offensive culmination, because the situation that caused the defender to defend still exists -- he still lacks the relative force to attack; no opportunity has been created. Until the attacker's combat power is reduced sufficiently, the defender will continue to lack the relative capability to attack.

Conversely, if the attacker culminates but the defender continues to gain benefit from defending, he is likely to continue to defend as long as the enemy is willing to expend himself. When the attacker stops because he is weakened, the defender is no longer gaining benefit -- he may even lose relative strength if the attacker reconstitutes -- and

should attack if decision is desired. While recognition of the approach of culmination is essential to avoiding the disaster Clausewitz spoke of, it is also difficult to accomplish.

The indicators of defensive culmination are of great importance, but more difficult to define as a fixed guide or set of principles. The factors that weaken a force will vary according to the nature of the forces involved, the type of war being fought, and the battlefield environment. Because culmination involves both forces, any indicators of culmination must necessarily consider both the attacker and the defender. There are a variety of ways that one may define the conditions leading to culmination.

Clausewitz lists five causes or conditions that may lead to culmination of the attack and begin the first step toward defensive culmination: (1) Having to besiege, assault or observe enemy fortresses (which could include the concept of bypassed pockets of resistance, field fortifications, and strongpoints); (2) the cost of securing areas already captured increasing as the attack progresses, especially as the attack moves into enemy territory; (3) the distance of the attacker from his sources of supply increasing; (4) the relaxation of effort relative to the defender who may now exert desperate effort as the attacker approaches him; (5) the loss of allies.[16] This addresses only the first half of the equation.

Clausewitz also indicates the factors that degrade the defender's strength relative to the attacker: (1) The defender suffers heavier losses than the attacker; (2) the defender loses fixed facilities (bridges, supply depots); (3) the defender loses resources as he loses terrain to the attacker; (4) the attacker gains assets from captured resources; (5) the defender loses cohesion; (6) the defender loses allies; (7) the defender becomes discouraged (loses

morale).[17] In listing the *causes* for culmination, Clausewitz has also suggested its indicators.

Clausewitz also lists other miscellaneous signs that suggest a change has occurred in equilibrium: the moral effect on the commander; the loss of personnel faster than the enemy; the amount of ground lost; the loss of artillery; retreat and the loss of, or failure to capture, key positions; weakening of output of fire; disruption of battle lines and the cutting off forces. When these have begun to occur, the battle may then turn on who has the best ratio of reserves.[18]

Most of these elements hint at the modern conception of *combat power*. Field Manual 100-5 suggests that combat power consists of four primary elements -- *Maneuver, Firepower, Protection*, and *Leadership*.[19] Other possibilities include Major David Benjamin's suggestion of the following elements as indicators of culmination: Reserves, Logistics, Communications, C2, Lines of Communications, Maintenance, Repair Capability, Replacements, Combat Service Support.[20] He also later uses a modification of the Field Manual 100-5 combat power elements: Generalship, Logistics, Firepower, Maneuver, and Protection.[21]

LTC William C. Cockerham's study of the culminating point of victory in Rommel's and Montgomery's North African campaigns, provides ten criteria for assessing culmination. The first seven are based on Clausewitz's indications of culmination:
(1) Personnel, (2) fixed assets, (3) ground (terrain), (4) supplies, (5) cohesion, (6) allies, (7) morale, (8) vigor, (9) leadership, and (10) time.[22] Each of these seeks to find elements

of combat power capable of influencing or at least demonstrating the approach of the culminating point.

If the culminating point is, as Clausewitz indicates, a point of balance, then the defender succeeds if he maintains or improves his strength relative to the attacker. Although Clausewitz does not specifically define what constitutes *strength*, the term is perhaps best expressed in the notion of combat power. Using the elements of combat power in Field Manual 100-5: *Maneuver, Firepower, Protection,* and *Leadership*, one can find most of the criteria necessary to judge the condition of a force. U.S. Army Training and Doctrine Command Pamphlet 525-5 adds *Information* as a source of combat power, a useful category given the intelligence implications of identifying the culminating point.[23] Given the abstract nature of these concepts, the Battle of the Bulge offers a practical means to examine these theories in practice.

By the Fall of 1944, the German operational defensive had begun to reach its point of culmination. The German Western Front commander, now for all intents Adolph Hitler, saw a daily decay in the efficacy of the defense. Generalfeldmarschall Fritz von Manstein had managed to stabilized the Eastern Front along the Dnieper River, but the inevitable Soviet offensive expected in January 1945 was certain to continue the disastrous losses of soldiers, equipment and terrain already inflicted on the Germans since the end of 1942. In the West, the Allies had made progress in clearing the Scheldt Estuary and by November 1944 the first Allied vessels entered the port of Antwerp. Little time remained before the German collapse in the East and the American build-up in the West enabled by the opening

of Antwerp, would result in the defeat of the Third Reich. Hitler was faced with the historic German challenge of facing two powerful enemy forces on two fronts.

The Allied offensive, too, had reached culmination in the Fall of 1944. Caught between the political and operational need to continue the offensive and logistical over-extension, the Allies ground to a halt as the Germans fell back onto the Siegfried Line and their own territory. The elements of defensive culmination were completed by the fact that the Germans were increasingly unable to inflict large casualties on the Allies or retain important terrain, while their enemies were beginning to rebuild their combat power. Faced with delaying or defending deeper in German territory, Hitler chose to attack from the relative position of strength offered by the Siegfried Line.

"In early September, most men in the Allied high command believed that victory over Germany was imminent. The near-miraculous revitalization of the German Army in October had come as a shock...The failure of our November offensive ... had been a further jolt, leading Ike ... to conclude that we would probably be ... unable to mount a decisive offensive until after the spring thaw in late April or May 1945."[24]

Omar N. Bradley

III. Case Study.

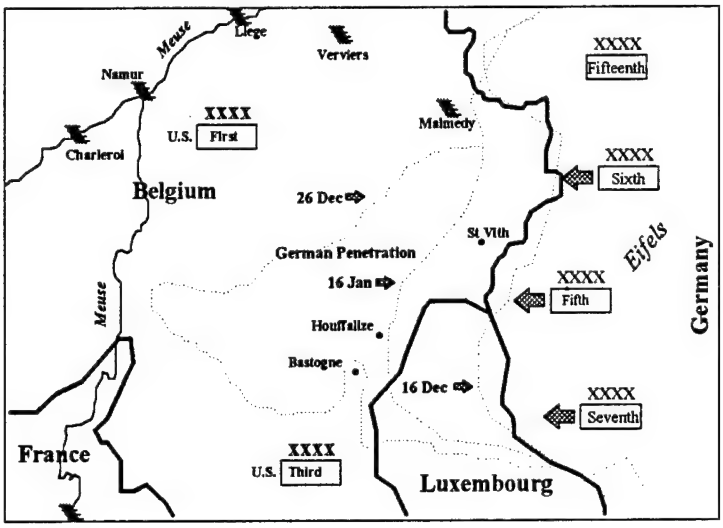
The Battle of the Bulge opened on 16 December 1944, as Sepp Dietrich's 6th SS Panzer Army and Hasso von Manteuffel's 5th Panzer Army spearheaded the German counteroffensive. Using a plan similar to the 1940 invasion of France, the Germans attacked into the Ardennes, an American sector used for resting combat units. Opposed by less than five US divisions under the V and VIII (US) Corps, over 12 German divisions broke through thinly held defenses, completely surprising the Allies at all levels. Ernst Brandenberger's 7th (GE) Army covered the southern flank of the penetration, while the 15 (GE) Army supported the northern shoulder.

The U.S. V Corps held firm in the North, as did the 4 Infantry Division in the South. Between these shoulders, the German attack moved rapidly toward the Meuse River. General Omar N. Bradley, commander of the 12 Army Group, reacted by committing two of his armored divisions, the 7th and the 9th, as immediate reinforcements. General Dwight D. Eisenhower committed the Supreme Headquarters Allied Expeditionary Forces reserve -- BG McAuliffe's 101 Airborne Division to block the 5th Panzer Army, and MG Ridgway's 82 Airborne Division to reinforce the northern shoulder. Field Marshal Bernard Montgomery, commanding the 21 Army Group, shifted his I (UK) Corps to provide a

backstop along the Meuse. General Bradley then launched elements of the III (US) Army in a counterattack to the North.

By 20 December, Eisenhower transferred US forces north of the Bulge to Montgomery, leaving Bradley with forces in and to the south of the Bulge, including LTG George S. Patton's counterattacking III Army. The German 6th Army was unable to make the rapid progress against the U.S. 7th Armored Division needed to accomplish the German's operational objectives. The U.S. V Corps continued to hold the northern shoulder, while the 101 Airborne Division held Bastogne. Seriously delayed by their failure to seize Bastogne, the 5 Panzer Army began to bypass it in the direction of the Meuse river to the Northwest. At this point Army Group commander, Model requested authority from Hitler to shift the main effort to 5 Army, which had the greatest prospects for success. Hitler refused, preferring to allow his SS army to remain the main effort or *Schwerpunkt*.

By 19 December the lead elements of Patton's army were moving north and on 20 December the XII Corps began its counterattack into the southern flank of the salient. On 22 December, Patton's III Corps began its attack in the direction of Bastogne and St. Vith. The German penetration reached as far as Celles and stopped due to lack of fuel and operational depth of forces. Patton reached Bastogne on 26 December as the weather cleared to allow Allied air forces hit German forces.



The Battle of the Bulge – Operational Situation

On January 3, Montgomery counterattacked on the northern flank with Hodges 1st (US) Army and, in conjunction with Patton's army, began reducing the German penetration. On January 8, Hitler finally relented to the requests of his subordinate commanders and permitted the withdrawal of the 6 Army. By January 16, the Allies had eliminated the Bulge. Although defeated, the German attack had been far larger and penetrated far deeper than the Allies had thought possible at this stage of the war. How did the Germans achieve this level of surprise and disruption of the Allied offensive?

By September 1944, the Allied offensive had made tremendous gains, while German losses continued to mount. The Allies' position was also precarious, even if temporarily so. Engaged from Switzerland to the North Sea, their forces were stretched thinly across Europe. The Allies only managed to open the port of Antwerp just prior to the German counteroffensive, meaning that most of the Allied supplies still came over the beaches at Normandy. This increased the time and difficulty to support offensive operations. The entire Allied theater reserve consisted of two airborne divisions stationed in England. The

12 Army Group under Montgomery started from Maastricht and ran north, with the 12 Army Group under Bradley extending south from Maastricht to just north of Saverne. South of the 12 Army Group was General Jacob L. Devers' 6 Army Group. Although the offensive stalled as the Germans reached the Siegfried Line, the Allies had no intention of halting the attack.

The Germans' condition was moving in a different direction. The overwhelming pursuit of the Allies since the breakout from Normandy slowed as the Germans reached the Siegfried Line and their own territory. Beyond the Siegfried line was the Rhine River, another barrier the Germans counted on to support their defense of Germany. German factory production had reached its wartime peak in small arms and ammunition. The Soviet offensive on the Eastern Front had slowed and would likely remain dormant until the start of the anticipated winter offensive in January. German morale among troops and civilians was good, showing little of the psychological damage predicted by air power enthusiasts. Although Italy had left the Axis, the Italian front had consolidated under the leadership of Field Marshal Albert Kesselring.[25]

The combat that had occurred since Normandy had cost the Americans heavily in soldiers. Bradley had frequently expressed to Eisenhower his concerns over infantry shortages and their effect on his command.[26] Although some of these losses had been made up by reclassifying air defense and tank destroyer specialists as infantry, replacement efforts proved to be gravely inadequate. Bradley made it clear that the impact on combat effectiveness was far from trivial. "Aside from the problem of depleted unit strength we

found it difficult to find enough divisions to perform all the tasks that required immediate attention and still maintain the concentrations required for successful attack."[27]

Unit effectiveness had been decreasing steadily since Normandy as the Americans fought virtually without rest since the invasion. At the same time the hard-pressed Germans were still able to rotate combat units out of the line for rest and refit. This, combined with the inability of the Allies to pull infantry soldiers out of the line, resulted in Eisenhower's decision use the Ardennes as a place to hold units undergoing rest and refit.[28] Weariness by this time was rather widespread among American forces.[29] Eisenhower recognized this sign of offensive culmination in the form of his severe personnel problems, "Through late November and early December the badly stretched condition of our troops caused constant concern, particularly on Bradley's front."[30]

Montgomery was also short of forces, fighting with the last infantry Great Britain could provide.[31] With limited manpower, the Allies had relied to this point on artillery and air power to defeat the Germans.[32] Yet since Normandy, the Americans were forced to place restrictions on artillery ammunition expenditures, largely because political pressures in the United States had reduced a perceived ammunition overproduction. The problem was not solved until several months after the German counteroffensive.[33]

Another concern was Allied leadership. Military historian Russell F. Weigley contends that the Germans held a significant edge in generalship beyond the notable exceptions of Patton, MG John S. Wood, and MG J. Lawton Collins. In support of his view, Weigley cites the American decision to attack through the Huertgen Forest rather than bypass it as an example of the relatively poor leadership quality at the operational level. While the

most difficult of the elements of culmination to validate, at a minimum Weigley's opinion parallels those of Hitler and his general staff.[34]

In September 1944, as American infantry divisions were holding frontages far larger than their commanders wished, the United States had decided to provide no more than the 90 divisions already being committed.[35] General Eisenhower understood the condition of the Allies when he assessed the German offensive and the state of his forces, "We knew that even if we should finally succeed in this fashion in stopping the advance there would be nothing left for a decisive counterstroke."[36] His evaluation indicates the narrowness of the Allied margin over the Germans prior to the Battle of the Bulge. With insufficient infantry replacements, stretched lines of communication, poorer quality leaders (at least in German estimates), and diminished firepower, the Allied offensive culminated against the strong and increasingly determined German defenses.

Evidence of German culmination was equally apparent. Generaloberst Alfred Jodl's assessment of the western front was that there were 96 Allied divisions opposing 55 German divisions. Jodl, Hitler's chief of operations, estimated that an additional ten divisions would soon be enroute to the battle zone from Great Britain, with two Allied airborne divisions in the United Kingdom as the operational reserve. The Germans were severely short of tanks, heavy weapons, and ammunition.[37] Germany had lost 1.2 million men on both fronts and the room to maneuver was gone in the West and diminishing in the East.[38] The resources of Rumania, Finland, Norway, Sweden, Russia, France, Yugoslavia, and Spain, so desperately required for the war effort, had been lost. Allied air interdiction had destroyed much of the German synthetic oil production, which combined devastatingly

with the loss of Rumania's oil fields to the Soviets.[39] The Germans were clearly experiencing the loss of resources Clausewitz noted as a leading cause for loss of defensive strength.

Although German industrial production was actually very healthy in the months prior to the attack, it could not keep pace with the huge losses experienced on both the eastern and western fronts. Contributing to this problem was the fact that the Germans had lost, permanently, the ability to control the air medium. Not only did this contribute to their oil production problems, but it would also greatly complicate their efforts to transport and concentrate forces for the counteroffensive. German manpower constraints were even more severe than those of the British and Americans. The Germans had lost 3.75 million men since the war began.[40] Like the Allies, German culmination was perhaps most evident in its personnel shortages.

Production of tanks was also below requirements. Even newer tanks sent to the armies preparing for the offensive seldom received them, most of them being either diverted to the defensive fight or found to be defective. Perhaps more detrimental was the German shortage of motor transport. Troop units had only 50-80% of their authorized truck strength, including a large number of captured foreign trucks. As one would expect spare parts did not exist for foreign trucks, but even parts for German trucks had become scarce. Especially short were transporters for artillery, a shortage that eventually limited the ability of German artillery to support the offensive. Signal equipment was antiquated, worn out, and short. During the Soviet offensive, the Germans had lost a large amount of anti-tank guns.[41] The Germans, in spite of increased production during the Fall, were exceptionally

short of ammunition. The starting stocks before the offensive were less than half of those on hand for the 1939 invasion of Poland.[42]

Notwithstanding these shortages, Germany was not yet defeated in the West. The Germans still had 10 million men in uniform, 2 million of which were *Waffen SS*. German industry had produced a record amount of ammunition, rifles, machine guns, and artillery pieces in Fall 1944. Jet aircraft were now under development, promising to turn the balance of air power. The Germans had halted the Soviet offensive, a condition likely to continue until January or February. The Eastern Front was also an area where the Germans could still afford to trade space for time. On the Western Front, the Siegfried Line remained intact and capable of supporting German defensive efforts. The German rail, despite attacks from Allied air, was in remarkably good shape and the Germans used it extensively to concentrate forces for the offensive.[43] The German operational defense in the West had culminated, but was as yet far from defeat. It was this remaining strength, measured by Hitler against his perception of relative Allied weakness, that finally defined the culmination of the Western Front.

Hitler articulated this assessment in his statement to division commanders at a pre-battle conference:

> War is of course a test of endurance for those involved. ... The moment all hope of victory disappears people's determination becomes insufficient to withstand the test of endurance, in the same way a fortress will go on fighting as long is there is hope of relief. It is therefore vital from time to time to destroy the enemy's confidence in victory by making clear to him by means of offensive action that his plans cannot succeed. A successful defensive can never achieve this as effectively as a successful offensive. In the long run the principle that the defensive is stronger than the offensive does not hold. We must not forget that the total manpower available on our side is still just as great as that of the enemy. We must not forget that a considerable portion of our enemy's strength is tied down in east Asia facing Japan, facing a power which, even without China, comprises well over 100 million men and from the technical equipment point of view is a major factor.[44]

Hitler knew that the German army's defense in the western theater had culminated. As important as Hitler's impressions were the Allied perceptions of the German condition.

In mid-September, the Allies felt that the Germans were on the verge of collapse. The Allied estimate of the German Army's condition in the Fall of 1944 was not altogether inaccurate. The Allies had made significant gains in territory since Normandy, while the Germans had suffered losses which Bradley estimated to be twice those of the Allies.[45] German air power was no longer capable of threatening Allied operations, while Allied air flew with increasing impunity against the Germans.[46] As late as 12 December 1944, the 12 US Army Group Intelligence Summary stated, "It is now certain that attrition is steadily sapping the strength of German forces on the Western Front and that the crust of defenses is thinner, more brittle and more vulnerable than it appears on our G-2 maps or to the troops in the line." Contributing to this impression were reports that the Germans had no fuel for aircraft and tanks, eliminating in many minds the possibility of a renewed offensive.

The Allies also believed, mistakenly, that von Rundstedt held complete command of the western front. At this point in the war it was Hitler who commanded at the operational, and often tactical, level in the Western Theater.[47] To Allied commanders and staff, von

Rundstedt represented competence and rationality; a rationality they felt lent a level of predictability to the theater.[48] The Allies felt that the Germans would defend the Ruhr at almost any cost and that the "rational" Germans would respond to the Allied main effort by making the area their main effort as well. It was on this perspective that the Allies based their intelligence collection efforts.

From the German perspective, the Ardennes was an entirely rational selection. It offered ideal terrain for concealing a build-up and offered the prospect of achieving an initial penetration with limited opposition. Assuming sufficient penetration, this approach could split Allied forces, capture the major supply area of Liege and the critical port of Antwerp, and create an opportunity to encircle and destroy at least three Allied armies. Bradley and Eisenhower on the other hand, believed that although their forces were thin in the Ardennes, the area offered no significant advantage as a terrain or force objective.

This Allied assumption, however, was based on a German counterattack, rather than a counteroffensive. As Bradley later wrote, "It should be emphasized that none of us ... was thinking in terms of a major strategic counterattack. We were thinking in terms of (as a SHAEF intelligence report put it) 'a spoiling attack of considerable power' *after* we crossed the Roer River."[49] The Allies called the Ardennes a "calculated risk" following the battle, but this was only true in as far as the calculation discounted the possibility of a counteroffensive.

Adding to the difficulty in determining German intentions was the quality of their deception measures. The Germans sought to convince the Allies that they would do precisely what the Allies expected. At the heart of the German plan was the strict security

Hitler imposed from the inception of the operation. He limited the number of commanders who knew about the plan and set a time table for informing subordinates about the offensive. The deception plan was based on half truths that reflected a situation expected by the Allies -- a possible counterattack in the Rhine area between Cologne and Bonn.

In the Cologne area, the Germans assembled divisions that would, in the final days, join units near the Ardennes to the South. The northern build-up was only partially concealed, allowing the Allies to detect enough activity to convince them that this was the main area of concentration. As an example, the Germans increased the density and fire of their anti-aircraft artillery to furnish a picture of a build-up and to attract the attention of Allied reconnaissance aircraft. The fact that the force detected was approximately army in size reinforced the Allied expectation of a counterattack with limited objectives, rather than a counteroffensive requiring larger forces to achieve deeper objectives. Many of the panzer divisions placed under the 6 Panzer Army were portrayed as being a part of the notional 25 Army. This demonstrated that the Germans recognized that the 6 Panzer Army was an Allied "signature unit" which would indicate an offensive main effort.

The German objective in the real concentration area was to continue to portray it as the rest and refit sector it had been. The forces here used camouflage extensively to augment the thick forests that covered the hills, valleys, and plateaus of the Eifel. The highly dispersed and numerous villages of the Eifel assisted in concealing troop concentrations as few other places along the front could have. Hitler instituted special security detachments to patrol assembly area in search of camouflage violations. The Germans also rigorously

controlled road and rail traffic into and inside the assembly areas, with movements of units and vehicles limited to night and periods of reduced visibility.

The Allies had come to rely on the intercept and decoding of German ULTRA radio transmissions as a means of understanding German operational intentions. Owing in part to Hitler's security precautions and in part to the fact that the Germans had fallen back onto their reliable telephone system, ULTRA was of very little use. Tactical units practiced radio silence except for units actually in contact and defending in the line. Bradley admitted, "... our intelligence community had come to rely far too heavily on Ultra to the exclusion of other intelligence sources."[50] The Allies interpreted the lack of ULTRA intercepts regarding a counterattack as a confirmation of their assessments that no new operations were planned.

The German withdrawal into their own territory offered another little understood security benefit. Important sources of human intelligence from local civilians and resistance forces were no longer available to the Allies in the numbers they had been. With a slow-down in the offensive, the Allies took very few prisoners in the months before the offensive, further limiting human intelligence. German commanders also removed their less reliable soldiers -- primarily "ethnic" Germans -- from the front to reduce the number of desertions. The few prisoners and civilians who had information about the offensive came too late to be of use or in too small numbers to be credible.

Allied ground reconnaissance in the Ardennes detected and reported the sounds of large scale movements, but this only served to confirm the Eifel as a rest sector, with units moving in to refit and others moving back out to the front. The Germans further limited

the success of Allied reconnaissance by restricting their patrols to small numbers of officers conducting personal reconnaissance, while combat patrols focused on intercepting Allied patrols which might uncover offensive preparations. Artillery registration was restricted to units in contact and then to only a few rounds per day.[51] Any notice taken of these measures was attributed to its being a "quiet sector".

Allied air posed the greatest threat to the deception effort, particularly night reconnaissance employing illumination flares. The level of engineer activity and road and rail movement accidentally detected by air would attract more reconnaissance and eventually compromise the preparations. This left the Germans a troublesome dilemma -- protect the build up with air defense and risk attracting Allied attention or leave the build-up area unprotected and potentially vulnerable to reconnaissance and attack. Fortunately for the Germans the Allies "weighted" their main effort with reconnaissance and expended very little effort in the Eifel-Ardennes area of the front. By looking only where they expected to find something, Allied intelligence staffs insured they would confirm their estimates.

Allied aerial reconnaissance flew 242 successful missions west of the Rhine from mid-November to mid-December, although most took place in November in support of the Allied offensive. Night missions reported large numbers of vehicles moving by both road and rail.[52] The picture clearly indicated a large build-up, but the interpretation continued to support the Allied expectation of a counterattack in the North. Contributing to this was the fact that most of the areas where activity was sighted could support concentrations in almost any place along the front. Despite the overall effort, the Allies flew only three

missions directly opposite of VIII Corps in the critical days of 10-15 December. Although VIII Corps had requested more flights, the Ardennes was a low priority and received little attention. The German perception of the Allied position proved to be more accurate, if overly optimistic.

Hitler was convinced that the Allies were sufficiently divergent in their political objectives that he could exploit this weakness. He believed that he could achieve this by driving a wedge between their armies, destroying one partner in the coalition, or holding out long enough to let the coalition fall apart of its own accord.[53] Hitler, not altogether incorrectly, assessed the Allies to be as weary as the Germans.

The lack of quality replacements in the German Army was matched by the dwindling numbers and quality of infantrymen fielded by the Americans. By Hitler's estimates, the Americans had lost 240,000 men in three weeks. While he acknowledged that the enemy had more tanks, he believed that his new models of tanks were qualitatively superior to American tanks and would more than compensate any quantitative deficiencies. Indeed, in keeping with his beliefs in racial superiority, Hitler felt that his army possessed a quality advantage in virtually every area where it lacked in quantity.[54]

About two-thirds of the German tanks employed were Mark VI (Tiger) and Mark V (Panther), each of which was superior in speed, armor, and firepower to the Sherman, including the M4A3 with its new high-velocity 76mm main gun. On paper the artillery capabilities of each side were very similar, although German ammunition shortages exceeded those of the Americans, while the severe shortages of prime movers made continuous support impossible. The quality of German and Allied anti-tank guns were

comparable because German superiority in this area had been eroded by substantial losses on the Eastern Front.[55] With air potentially limited by weather and artillery constrained by both weather and ammunition, the two great American advantages in firepower were effectively reduced. American forces were now more vulnerable to a large scale counteroffensive than at any other point since Normandy.

The German view of the Allies was also based in part on Hitler's wishful thinking. The Germans were facing a problem that had plagued them since before World War I -- how to fight and win a two-front war. They needed a solution that would decisively and quickly defeat one of the attackers in order to later deal with the other. Hitler's problem was similar to his predecessors, as was his solution. He chose to attack to destroy one while defending on the other front. In view of the immense size of the Soviet Army, the Allies in the West were an obvious target.

Although difficult perhaps for the Allies to perceive at the time, the indications of culmination were present and known to a large degree by each side of the conflict. While not an exhaustive list, they represent the primary indications that the balance between forces had changed.

The indications of Allied offensive culmination:

- scarcity of operational reserves (two airborne divisions)
- poor loss/replacement ratio (especially infantry)
- shortages in key logistics items (ammunition as evidenced in reduced rate of fire)
- indications of some leadership deficiencies
- loss of offensive momentum
- political considerations (U.S. - British - Canadian - French)
- condition of allies (weakening British manpower pool)
- loss of national will (British)

The indications of German defensive culmination:

- poor loss/replacement ratio (expansion of draft pool)
- scarcity of operational reserves (use of holding actions to free 5th and 6th Army)
- loss of ground (particularly French and Belgian ports)
- the increased effort (to protect their own territory)
- commitment of tactical reserves (reduced numbers of armored units)
- leadership considerations (Hitler vs. Rundstedt as operational commander)
- political considerations (need to restore political and civilian confidence)
- condition of allies (Italy's loss)
- loss of strategic resources (petroleum, minerals, etc.)

The presence of these indicators alone does not predict defensive culmination and its associated counteroffensive. The Allies knew that all of these conditions existed in the German Army on the Western Front, yet failed to predict the offensive outcome. Well aware of their own condition, the Allies failed to appreciate that the relationship between their culmination and that of the Germans had created an opportunity for their opponent. Current U.S. Army doctrine continues in this tradition by defining the defensive culminating point as defeat, rather than as a point of equilibrium when the defender must act or face defeat. This in turn has influenced intelligence doctrine and the ability of the U.S. Army to anticipate the approach of defensive culmination. In order to determine defensive culmination, a different approach to analysis is needed.

"Americans and British had looked in a mirror for the enemy and seen there only the reflection of their own intentions" [56]

Hugh M. Cole

IV. Intelligence Preparation of the Battlefield and Estimating the Defensive Culmination Point.

Given the presence of certain indicators, determining the culminating point appears to be a fairly simple process. Clausewitz, however, recognized the difficulty in divining the intentions of the enemy in wartime:

> Many intelligence reports in war are contradictory; even more are false, and most are uncertain. What one can reasonably ask of an officer is that he should possess a standard of judgment , which he can gain only from knowledge of men and affairs and from common sense. He should be guided by the laws of probability.... This difficulty of accurate recognition constitutes one the most serious sources of friction in war, by making things appear entirely different from what one had expected....Once this is cleared away, and the horizon becomes unobstructed, developments will confirm his earlier convictions...[57]

The U.S. Army's current system for estimating enemy capabilities, courses of action, and intentions is Intelligence Preparation of the Battlefield (IPB). Field Manual 34-130, *Intelligence Preparation of the Battlefield,* describes this four step procedure as a "systematic, continuous process of analyzing the threat and environment in a specific geographic area. It is designed to support staff estimates and military decision making." It also lists the function of IPB as "determining the threat's likely COA [Courses of Action]". It is the Army's primary procedure for analyzing the enemy's capabilities against the battlefield environment and determining what the enemy is capable and likely to do.[58] This system was not available to the G2s of the second world war, but it is the Army's doctrinal approach to similar situations in future conflicts.

The IPB process consists of four steps: (1) Define the battlefield environment; (2) describe the battlefield's effects; (3) evaluate the threat; (4) determine threat courses of action. The first step, "Define the Battlefield Environment", determines the broad characteristics of the battlefield that affect friendly and enemy operations. The analyst considers the commander's area of operations and battle space and significant elements of the environment such as geography, terrain, weather, logistical infrastructure, and demographics. The area of interest is also determined in this step, defining the geographical area in which the commander has information requirements. The type of operation and the battlefield circumstances play a significant role in determining what factors are considered in this step. Of particular interest to the Allies would have been the changing weather conditions, the security and infrastructure available to the Germans as they fell back into their own country, and the natural and man-made obstacles presented by the Siegfried line and Rhine River.

The second step, "Describe the Battlefield's Effects", evaluates the influence of the battlefield environment on friendly and enemy forces. It compares friendly and enemy capabilities and limitations against the effects of things such as weather, terrain, infrastructure, politics, and local population to determine how each side can employ its forces under the expected conditions. This evaluation takes into account both forces, but emphasizes the effects on the enemy as a prelude to the fourth step. The result of this step is normally a series of products depicting the environment within the command's area of interest.[59] The Allies using the IPB process might have identified the effect of the Germans being on their soil as improving security, transportation, communications, and

infrastructure, as well as gaining manpower from the need to man fewer garrisons and outposts. The Allies might also have recognized the strength of the Siegfried Line and the German rivers as permitting the Germans to economize their forces and provide greater offensive freedom of action.

"Evaluate the Threat" is the third step. It determines how the enemy normally conducts combat operations. In this step, the analyst evaluates the threat's organization, doctrine, and general capabilities in circumstances similar to those being analyzed. The analyst also outlines broad enemy courses of action and capabilities of individual combat systems. The result is a graphic or narrative model of how the enemy might conduct operations unconstrained by battlefield conditions. The "threat model" then becomes the basis for the final step, where the effects of the battlefield is combined with the enemy's doctrine. In this step German doctrine and tactics learned through years of war would have been studied for their application to the current situation and several options or models developed. Of particular interest to the Allies would have been the German propensity for counterattack in virtually all tactical and operational defensive actions.

The final step, "Determine Threat Courses of Action", combines analysis of the battlefield environment with the enemy's broad capabilities (threat models). The outcome is an estimation of the enemy's capabilities (courses of action) and possible intentions (most probable courses of action). The planning staff uses the graphic products developed in this step to understand what the enemy can and is most likely to do, an essential part of the deliberate decision making process. While the products are not intended to predict precisely what the enemy will do, they do assist in identifying and narrowing the list of

options available to the enemy.[60] LTC Adolph G. Rosengarten Jr., ULTRA analyst at First Army Headquarters, best summed up the Allied "step four" for the German decision to conduct a counteroffensive:

> "(a) the enemy was defending on an artificial line with a major obstacle, the Rhine, astride his supply lines. (b) The German doctrine is active defense. (c) The German situation, in the big picture, was so desperate that he could afford to take the longest chances and, (d) finally, the effect of our overwhelming air superiority was minimized by choosing a time when the daylight was shortest, and the weather most likely to be bad."[61]

The Allied "IPB" of the Germans was generally properly conducted by the Allies. On the other half of the equation, General Eisenhower also recognized the condition of his allied forces:

> "Montgomery's army group had long since absorbed all the British Empire troops available in the United Kingdom, including the Canadian Army and the Polish Division. Further reinforcement was impossible unless, as eventually happened, a few additional units could be brought up from the Mediterranean theater."[62]

In the American forces he recognized logistical and human exhaustion resulting from the Allied attempts to reduce fortresses on the Siegfried Line.[63] Eisenhower also noted that the fighting across the front in the Fall had become the "dirtiest type of infantry slogging", with high expenditures of ammunition and infantry stamina.[64] Losses included combat casualties, frostbite, trenchfoot, and respiratory diseases affecting primarily the infantry soldier. "Aside from the problem of depleted unit strength we found it difficult to find enough divisions to perform all tasks that required immediate attention and still maintain the concentrations required for successful attack."[65]

His summary of the Allies' condition held within it the key to predicting the German counteroffensive: "Through late November and early December the badly stretched

condition of our troops caused constant concern, particularly on Bradley's front."[66] The U.S. Army's present doctrine for analyzing enemy capabilities and intentions, while different from the methods used during World War II, would likely have resulted in a similar conclusion about German capabilities and intentions.

The current system of estimating enemy capabilities and intentions performs well in analyzing an enemy prior to contact with friendly forces; it views the enemy from the one-sided perspective of what he intends to do. An enemy's intentions are certainly based on his objectives. His intentions are also, however, based on his assessment of his opponent -- his own IPB process. It is here that IPB falls short of the mark in detecting defensive culmination. It does not clearly address the fact that warfare, and specifically culmination, is entirely interactive. The attacker cannot be considered in the absence of the defender. Clausewitz defined this interaction of forces as "positive reaction", a recognition of the fact that as in the antithetical relationship between offense and the defense, opponents neither exist nor fight in isolation.[67]

With complete victory seemingly at hand, the Allies did not analyze the condition of their own forces relative to the Germans. They assumed that the initiative had permanently passed to them and that the Germans were incapable of pursuing an unexpected ("irrational") course of action. The battered condition of the Germans was well known to the Allies, if overstated by optimistic G2s. From the accounts of American senior leaders in theater, they understood their own condition equally well. The failure, then, was less one of collecting the necessary intelligence than of interpreting available information.

Like the definitions found in the current Field Manuals 100-5 and 34-130, the Allies had no framework for understanding defensive culmination or its implications. Without a firm grasp of the concept defensive culmination, the available indicators in German and Allied forces had limited value to American G2s and commanders. Similarly, IPB in today's doctrine provides no useful framework for anticipating defensive culmination because of its nearly complete emphasis on enemy forces. Thus, while all of the elements needed for identification of defensive culmination may be available, analysts may continue to miss the mark until the concept is doctrinally understood and indicators developed which describe actual options available to the defender. It is to the analysis of these indicators, in both forces, that the IPB process must next turn.

"I believe the enemy has nearly reached his breaking point. As a matter of fact, we are stretched pretty thin ourselves."[68]

General George S. Patton

V. Synthesis.

Anticipating defensive culmination requires three areas of consideration. First, the concept of culmination, and its consequences, must be clearly understood. Second, the indications of culmination must be identified. Third, analysis of enemy capabilities (IPB) must identify the approach of culmination by analyzing both the attacker and defender and recognizing the indicators in each. We have seen in the Allied experience in World War II that failure to do so can lead to a misperception of enemy intentions. Solutions answering all three of these requirements are needed if this analytical shortcoming is to be avoided.

As mentioned in Section II, current doctrinal definitions inadequately express the complexity of defensive culmination and their simplification contribute to misunderstanding. Defining culmination as essentially the defeat of the defender, doctrine ignores the defender's potential to attempt to wrest the initiative from the attacker once the attacker has weakened himself through over-extension. The defender's culminating point is reached as the attacker has become vulnerable and the defender has recognized that his goals cannot be met by continued defensive action. Understanding this interaction is essential to identifying the conditions and consequences of defensive culmination.

Having clearly defined culmination, the analyst must next look for the indicators of culmination in each force. The following indicators of culmination are drawn from what was known about each opponent prior to the Battle of the Bulge, listed under headings

derived from more current definitions of combat power. While not a complete list, it compiles the major factors that evidenced culmination in the Allied and German forces and presaged the German offensive.

	Maneuver	Firepower	Protection	Leadership	Information
Offense (Allies)	Forces	Weapon Systems	Extended LOCs	Battle Command	C2
	Follow-on Forces	Ammunition	Loss/Replacement Ratio	Leader problems	C2 Warfare
	Mobility/Transport	Air Support	Allies/Politics	Morale/fatigue	Intelligence
	Lack of Reserves	Artillery		National Will	
Defense (Germans)	Mobility	Weapon Systems	Improved LOCs	Battle Command	Deception
	Loss of Territory (including Ports)	Ammunition	Air Defense (Weather)	Leadership	Security
	Ability to Generate Reserves	Air Support	Resources	Loss of Allies	Improved C2
	Fewer Forces in Garrisons Duty		Key Logistics Items	Need to Restore Confidence	Fewer German Prisoners
			Siegfried Line	Desperation	

The current IPB process does not incorporate any technique for comparing friendly and enemy relative strength to develop enemy courses of action. While it is probably assumed that this information would be well known to the analyst, determining friendly status is as complicated as determining that of the enemy. As an example, Field Manual 34-1, in discussing offensive operations, talks about enemy intentions in the defense in terms of a capability continue to defend or withdraw.[69] The enemy's decision to adopt a course of action is not based simply on his own capability, but on his *relative capability*. He will act not only according to his own needs, but also according to the actions and ability of his opponent. Developing enemy courses of action without a thorough examination of the friendly condition and its influence on the enemy is misleading at best.

Field Manual 34-130 (IPB) describes the "Battlefield Environment" in terms of each force and its effects on those forces. No mention is made of considering the status of each

force and their interactive impact on decision-making.[70] It does state that in determining threat courses of action, one must consider how the enemy is likely to perceive the situation.[71] While this thought is essential, it is not explored in the detail necessary to understand the positive reaction of two opposed forces. The manual describes the battlefield's "limiting factors" as elements such as terrain and weather, while no mention is made of how an enemy's courses of action are shaped by his opponent.

The procedure in doctrine most closely aligned with the concept of positive reaction is the Correlation of Forces comparison conducted as part of friendly course of action development. In spite of its value, there are several problems inherent in this procedure. First, the correlation assesses the feasibility of a friendly course of action against a selected enemy course of action. At this point it is too late in the decision-making process to develop enemy courses of action. New enemy courses of action would necessitate a re-evaluation by the staff. The second issue is the correlation itself.

No meaningful comparative data is available to staffs for assessing either friendly or potential enemy combat power. The normal result is that staffs either compare only the firepower and maneuver characteristics of each side, or use tables designed for instruction purposes (such as Fort Leavenworth Student Text 100-9) which have little or no analytical basis. Even in the presence of actual correlation tables, set-value comparisons could not take into account all of the elements of combat power and would exclude such things as protection and leadership, as well as critical sub-elements such as terrain, cohesion, and morale.

The information needed to assess the possible outcome of interaction might also be revealed in the process of a detailed war gaming of a course of action. This again provides the planning staff with enemy courses of action after they are needed. New enemy courses of action result in new friendly courses of action, starting the decision-making process over again. It is also likely that in a constrained time frame, the interaction of the forces could not be analyzed except at a superficial level.

The estimation of friendly capability requires analysis from the entire staff. The intelligence staff would not, for instance, duplicate the efforts of the operations and logistics staff in collecting information on the status of friendly forces. It would instead coordinate within the staff and conduct force comparisons as a routine part of enemy course of action development.

The IPB process need not be re-written in order to remedy its shortcomings. The existing framework is more than sufficient. Friendly force information should be collected in the second step, "Describe the Battlefield Environment". The analysis of friendly force combat power relative to the enemy would then be conducted in Step 4 "Determine Threat Courses of Action". While factors indicating the status of both forces may vary based on the situation, a methodical examination of both forces must be undertaken in order to understand the enemy's true courses of action. How we estimate friendly forces relative to the enemy is an essential step to understanding defensive culmination and the defender's full range of capabilities and intentions.

"... every war is rich in unique episodes. Each is an uncharted sea, full of reefs. The commander may suspect the reefs' existence without ever having seen them; now he has to steer past them in the dark."[72]

Clausewitz

VI. Conclusions.

It is clear from consideration of current intelligence analysis procedures and the historical example of the Battle of the Bulge, that the culmination of the operational defense is a matter of both concern and confusion. The usual difficulty in detecting enemy capabilities and intentions is made still more difficult when the enemy employs deception and the system of analysis does not fully account for the interaction of forces. Despite these difficulties, it is equally clear that the challenge of detecting defensive culmination needs to be met if enemy intentions are to be accurately estimated.

Both the Allies and the Germans recognized the indicators of culmination in themselves in the months leading up to the Battle of the Bulge. While no evidence exists that Hitler noted or even understood the concept of defensive culmination, his actions and statements demonstrate that the Germans responded to their culmination in the sense intended by Clausewitz -- the Allies had been weakened relative to them and the defense was no longer an efficient means of achieving German objectives. The Allies on their part failed to come to the same conclusions from the same information. They awaited a counterattack as a component of the defense rather than a counteroffensive as the result of defensive culmination. This perception in turn caused them to miss the true importance of the Ardennes, not as a means to a limited counterattack but rather as a major effort to seize the initiative from the Allies.

Anticipating defensive culmination first requires a firm grasp of the concept. Current Army doctrine dangerously over-simplifies the definition of culmination by ignoring the positive reaction of forces in combat. By dismissing defensive culmination as defeat, it loses the interactive intent of the concept and detracts from its value. This in turn negates the benefit of collecting or possessing the indicators of culmination, because no intellectual basis exists to evaluate them.

The indications of defensive culmination only become apparent to the intelligence analyst when friendly force calculations enter the equation. With adjustments, the IPB process can use friendly and enemy states as a starting point for estimating enemy courses of action. While collecting friendly indicators should involve the entire planning staff, it is ultimately the intelligence staff that must provide the integrating step of seeing the friendly force as the enemy sees it. The following categories provide at least some of the areas the analyst must consider in evaluating possibility of defensive culmination.

	Maneuver	**Firepower**	**Protection**	**Leadership**	**Information**
Offense	Forces	Weapon Systems	LOCs	Battle Command	C2
	Follow-on Forces	Ammunition	Loss/Replacement Ratio	Leader ship	C2 Warfare
	Mobility	Air Support	Logistics	Morale	Intelligence
		Fire Support	Air Defense	Cohesion	Deception
			Resources	Politics	Security
				Allies	
Defense	Reserves	Weapon Systems	LOCs	Battle Command	C2
	Mobility	Ammunition	Loss/Replacement Ratio	Leadership	C2 Warfare
	Terrain	Air Support	Air Defense	Morale	Intelligence
		Fire Support	Logistics	Cohesion	Deception
			Resources	Politics	Security
				Allies	

Several techniques for accomplishing this analysis suggest themselves. The current method of estimating enemy strength is subjective in its approach, using the number and type of combat systems as a guideline for combat effectiveness. This model could be greatly improved by considering all of the categories of combat power discussed in the previous section. While perhaps not mathematically sound, it could use a simple qualitative system of plus and minus ratings or color codes reflecting an estimated level of effectiveness. Such a system would have the benefit of allowing analysts to apply more intuition and produce estimates more quickly. It would also allows the less quantifiable elements of combat power, such as leadership and information, to be judged on a basis consistent with the other elements. This technique, which translates both quantifiable and intuitive information into subjective assessments, is also more likely to resemble the method of self-assessment used by each force, potentially increasing its usefulness.

A more mathematical approach could also be applied in which combat power factors are given numerical values that can be weighted and analyzed in spreadsheet or matrix format. This technique allows more objectivity in considering enemy and friendly strengths, but revives the problem of how to generate objective numerical force values and how to weight the values selected. Besides the obvious difficulty of determining numerical values that accurately reflect the combat potential of a force, there may also be political issues involved in publicly comparing the capabilities of the forces of other nations. The true danger in this method may be the analyst's perception that the correlation figures are less fallible by virtue of their mathematical basis.

While it is outside the scope of this paper to offer a complete methodology for accurately assessing the condition of friendly and enemy forces as they approach culmination, U.S. Army doctrine clearly needs refinement in its understanding of defensive culmination and its techniques for analyzing enemy intentions. The Allied assessments of German capabilities prior to the Battle of the Bulge suggest that the courses of action available to an opponent cannot be determined by considering either force singly, but rather by understanding their relative conditions. The indicators listed provide a useful beginning to understanding the what factors may evidence the approach of defensive culmination. Further study is required to develop the intuitive or mathematical models necessary to support a thorough analysis of friendly and enemy relative combat power.

The concept of defensive culmination offers a unique opportunity to explore both the theoretical interaction of forces and the practical intelligence implications of relative combat power. Defensive culmination presents the most striking and least understood case for understanding the relationship between the attacker and defender. While all of warfare is interactive, the importance of positive reaction becomes even greater as culmination in each force approaches. A firm understanding of defensive culmination, not demonstrated by the Allies prior to the Battle of the Bulge and current U.S. doctrine, is essential to understanding the combat potential of each force. Through adjustment of both U.S. Army doctrine and intelligence analysis procedures, the potential for misunderstanding the enemy can be reduced and the enemy's relative capabilities better understood.

Endnotes

[1] Carl von Clausewitz, On War. Edited and translated by Michael Howard and Peter Paret, (New York: Alfred A. Knopf 1993), 117.

[2] The culminating point appears to best fit the operational level of war. Many of the results of culmination (assuming the defensive or transitioning to the counteroffensive) are not options that can be exercised by commanders below this level since their actions may be more dictated by the campaign plan. A tactical unit defending may reach culmination but be prevented from counterattacking by the needs of its higher command.

[3] Ibid., 639.

[4] Ibid., 633.

[5] Ibid., 634.

[6] Ibid., 691.

[7] Ibid., 280.

[8] American Heritage Dictionary, 1979 New College Edition, s.v. "culminate."

[9] Clausewitz, 639.

[10] Ibid., 684.

[11] David J. Benjamin Jr., David J. Jr. Prerequisite for Victory: The Discovery of the Culminating Point, (Fort Leavenworth, Kansas: School of Advanced Military Studies, U.S. Army Command and General Staff College, 1986), 3. MAJ Benjamin proposes the concept of multiple culminating points resulting from modern wars composed of campaigns rather than single, decisive battles.

[12] U.S. Army, Field Manual 100-5, Operations, (Washington D.C.: Headquarters, Department of the Army, June 1993), 6-8.

[13] U.S. Army, Field Manual 34-130, Intelligence Preparation of the Battlefield, (Washington D.C.: Headquarters, Department of the Army, July 1994), Glossary-5.

[14] Clausewitz, 443.

[15] Ibid., 459.

[16] Ibid., 684.

[17] Ibid., 685.

[18] Ibid., 297.

[19] Field Manual 100-5, 2-10 to 2-11.

[20] Benjamin, 5-6.

[21] Ibid., 24-26.

[22] William C. Cockerham, Clausewitz's Concept of CPV in the North African Campaigns of Rommel and Montgomery, (Carlisle Barracks, Pennsylvania: U.S. Army War College, 1987), 23.

[23] U.S. Army, Training and Doctrine Command Pamphlet 525-5, Force XXI Operations, (Fort Monroe, VA: Headquarters, Army Training and Doctrine Command, August 1994), 3-9.

[24] Omar N. Bradley and Clay Blair, A General's Life , (New York: Simon and Schuster, 1983) 349.

[25] Hugh M. Cole, The Ardennes: Battle of the Bulge (United States Army in World War II: The European Theater of Operations), (Washington D.C.: Office of the Chief of Military History, 1965), 4.

[26] Dwight D. Eisenhower, Crusade In Europe, (New York: Da Capo Press (reprinted by arrangement with Doubleday and Company, 1948) 1977), 338.

[27] Ibid., 333.

[28] Ibid., 337.

[29] Russell F. Weigley, Eisenhower's Lieutenants, (Bloomington: Indiana University Press, 1981), 372.

[30] Ibid., 337.

[31] Ibid., 383.

[32] Ibid., 375.

[33] Ibid., 376.

[34] Ibid., 432.

[35] Ibid., 374.

[36] Eisenhower, 345.

[37] Cole, 1.

[38] Ibid., 2.

[39] Ibid., 3.

[40] Charles B. MacDonald, A Time for Trumpets, (New York: Bantam Books, 1984), 18.

[41] Cole, 72.

[42] Ibid., 664.

[43] Ibid., 664.

[44] Walter Warlimont, Inside Hitler's Headquarters 1939-45, (New York: Frederick A. Praeger, 1964), 486.

[45] Eisenhower, 338.

[46] Cole, 57.

[47] Ibid., 57.

[48] Ibid., 58.

[49] Bradley, 351.

[50] Ibid., 351.

[51] Cole, 50.

[52] Ibid., 61.

[53] Warlimont, 488.

[54] Ibid., 489.

[55] Weigley, 375-376.

[56] Cole, 63.

[57] Clausewitz, 137.

[58] Field Manual 34-130, 1-1.

[59] Ibid., 1-2.

[60] Ibid., 1-3.

[61] Weigley, 457.

[62] Eisenhower, 328.

[63] Ibid., 330.

[64] Ibid., 332.

[65] Ibid., 333.

[66] Ibid., 337.

[67] Clausewitz, 161.

[68] Martin Blumenson, The Patton Papers, (Boston: Houghton Mifflin, 1972), 576. LTG George S. Patton's own assessment of American forces on 5 December 1944.

[69] U.S. Army, Field Manual 34-1, Intelligence and Electronic Warfare Operations, (Washington D.C.: Headquarters, Department of the Army, September 1994), 4-7.

[70] Field Manual, 1-1 to 1-2.

[71] Ibid., 2-41.

[72] Clausewitz, 139.

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